United Nations

Report of the Committee on the Peaceful Uses of Outer Space

General Assembly

Official Records • Forty-seventh Session
Supplement No. 20 (A/47/20)

Report of the Committee on the Peaceful Uses of Outer Space

General Assembly
Official Records · Forty-seventh Session
Supplement No. 20 (A/47/20)

United Nations · New York, 1992

NOTE

Symbols of United Nations documents are composed of capital letters combined with figures. Mention of such a symbol indicates a reference to a United Nations document.

ISSN 0255-1144

[Original: English]

[28 August 1992]

CONTENTS

		Paragraphs	Page
I.	INTRODUCTION	1 - 17	1
II.	RECOMMENDATIONS AND DECISIONS	18 - 156	4
	A. Ways and means of maintaining outer space for peaceful purposes	18 - 24	4
	B. Report of the Scientific and Technical Subcommittee on the work of its twenty-ninth session	25 - 103	5
	Implementation of the recommendations of the Second United Nations Conference on the Exploration and Peaceful Uses of Outer Space	25 - 103	5
	1. Report of the Scientific and Technical Subcommittee on the work of its twenty-ninth session	26	6
	2. Implementation of the recommendations of the Second United Nations Conference on the Exploration and Peaceful Uses of Outer Space	27 - 51	6
	3. Matters relating to remote sensing of the Earth by satellites, including, inter alia, applications for developing countries	52 - 59	12
	4. Use of nuclear power sources in outer space	60 - 65	12
	5. Space transportation systems	66 - 68	13
	6. Examination of the physical nature and technical attributes of the geostationary orbit; examination of its utilization and applications, including, inter alia, in the field of space communications, as well as other questions relating to space communications developments, taking particular account of the needs and interests of developing countries	69 - 72	13

		Paragraphs	Page
	7. Matters relating to life sciences, including space medicine; progress in national and international space activities related to the Earth environment, in particular progress in the geosphere-biosphere (global change) programme; matters relating to planetary exploration; matters relating to astronomy .	73 - 75	14
	8. Themes fixed for the special attention at the 1992 and 1993 sessions of the Scientific and Technical Subcommittee	76 - 81	14
	9. International Space Year	82 - 94	15
	10. Space and Earth environment	95 - 103	17
C.	Report of the Legal Subcommittee on the work of its thirty-first session	104 - 136	18
	1. The elaboration of draft principles relevant to the use of nuclear power sources in outer space, with the aim of finalizing the draft set of principles at the current session ...	105 - 112	18
	2. Matters relating to the definition and delimitation of outer space and to the character and utilization of the geostationary orbit, including consideration of ways and means to ensure the rational and equitable use of the geostationary orbit without prejudice to the role of the International Telecommunication Union	113 - 127	19
	3. Consideration of the legal aspects related to the application of the principle that the exploration and utilization of outer space should be carried out for the benefit and in the interests of all States, taking into particular account the needs of developing countries	128 - 136	21
D.	Spin-off benefits of space technology: review of current status	137 - 146	22
E.	Other matters	147 - 148	23
F.	Future work	149 - 154	23
G.	Schedule of work of the committee and its subsidiary bodies	155	24

CONTENTS (continued)

	Paragraphs	Page
H. Tribute	156	24
Annex. Set of principles recommended for adoption by the General Assembly at its forty-seventh session. Principles relevant to the use of nuclear power sources in outer space		25

I. INTRODUCTION

1. The Committee on the Peaceful Uses of Outer Space held its thirty-fifth session at United Nations Headquarters from 15 to 26 June 1992. The officers of the Committee were as follows:

Chairman: Mr. Peter Hohenfellner (Austria)

Vice-Chairman: Mr. Aurel Dragos Munteanu (Romania)

Rapporteur: Mr. Edmundo Sussumu Fujita (Brazil)

The verbatim records of the Committee's meetings are contained in documents A/AC.105/PV.366-378.

Meetings of subsidiary bodies

2. The Scientific and Technical Subcommittee held its twenty-ninth session at United Nations Headquarters from 25 February to 5 March 1992 under the chairmanship of Mr. John H. Carver (Australia). The report of the Subcommittee was issued as document A/AC.105/513.

3. The Legal Subcommittee held its thirty-first session at Geneva from 23 March to 10 April 1992 under the chairmanship of Mr. Václav Mikulka (Czechoslovakia). The report of the Subcommittee was issued as document A/AC.105/514. The summary records of the Subcommittee's meetings are contained in documents A/AC.105/C.2/SR.550-561.

Adoption of the agenda

4. At its opening meeting, the Committee adopted the following agenda:

1. Adoption of the agenda.
2. Election of a Rapporteur.
3. Commemorative meeting on International Space Year.
4. Statement by the Chairman.
5. General exchange of views.
6. Ways and means of maintaining outer space for peaceful purposes.
7. Report of the Scientific and Technical Subcommittee on the work of its twenty-ninth session.
8. Report of the Legal Subcommittee on the work of its thirty-first session.
9. Implementation of the recommendations of the Second United Nations Conference on the Exploration and Peaceful Uses of Outer Space.

10. Spin-off benefits of space technology: review of current status.

11. Other matters.

12. Report of the Committee to the General Assembly.

Membership and attendance

5. In accordance with General Assembly resolutions 1721 E (XVI) of 20 December 1961, 3182 (XXVIII) of 18 December 1973, 32/196 B of 20 December 1977 and 35/16 of 3 November 1980, and with decision 45/315 of 11 December 1990, the Committee on the Peaceful Uses of Outer Space was composed of the following Member States: Albania, Argentina, Australia, Austria, Belgium, Benin, Brazil, Bulgaria, Burkina Faso, Cameroon, Canada, Chad, Chile, China, Colombia, Czechoslovakia, Ecuador, Egypt, France, Germany, Hungary, India, Indonesia, Iran (Islamic Republic of), Iraq, Italy, Japan, Kenya, Lebanon, Mexico, Mongolia, Morocco, Netherlands, Niger, Nigeria, Pakistan, Philippines, Poland, Portugal, Romania, Russian Federation, Sierra Leone, Sudan, Sweden, Syrian Arab Republic, Turkey, Ukraine, United Kingdom of Great Britain and Northern Ireland, United States of America, Uruguay, Venezuela, Viet Nam and Yugoslavia.

6. At its 367th and 368th meetings, the Committee decided to invite, at their request, the representatives of Bolivia, Cuba, Greece, Kazakhstan, the the Libyan Arab Jamahiriya, the Republic of Korea, Spain and the Holy See to attend the session of the Committee and to address it, as appropriate, on the understanding that it would be without prejudice to further requests of that nature and that it would not involve any decision of the Committee concerning status.

7. Representatives of the United Nations Department of Economic and Social Development, the Food and Agriculture Organization of the United Nations (FAO), the United Nations Educational, Scientific and Cultural Organization (UNESCO), the International Atomic Energy Agency (IAEA) and the International Telecommunication Union (ITU) also attended the session.

8. Representatives of the Committee on Space Research (COSPAR) of the International Council of Scientific Unions (ICSU), the European Space Agency (ESA), the International Telecommunications Satellite Organization (INTELSAT), the International Aeronautical Federation (IAF), the International Law Association (ILA) and the International Society for Photogrammetry and Remote Sensing (ISPRS) also attended the session.

9. A list of representatives attending the session is contained in document A/AC.105/XXXV/INF/1.

Commemorative Meeting on International Space Year

10. The Committee noted that the General Assembly, in paragraph 20 of its resolution 44/46 of 8 December 1989, had endorsed the initiative of international scientific organizations and bodies to designate 1992 as International Space Year, and in paragraph 22 of its resolution 46/45 of 9 December 1991, the Assembly had recommended that the Committee should dedicate at least one meeting of its regular session to the International

Space Year. Accordingly, the Committee held its 366th meeting, on 15 June 1992, in commemoration of International Space Year.

11. At the special commemorative meeting to mark International Space Year, introductory statements were made by Mr. Peter Hohenfellner, Chairman of the Committee, Mr. Vladimir Petrovsky, Under-Secretary-General for Political Affairs speaking on behalf of the Secretary-General, Mr. Alvaro Azcárraga, President of IAF, and Mr. W. I. Axford, President of COSPAR. A panel discussion was held on "New approaches to international cooperation in space in a changing world". Participants were Mr. Richard Barnes, former Head of International Affairs, United States National Aeronautics and Space Administration (NASA); Mr. Roy Gibson, former Director-General of ESA; Mr. U. R. Rao, Chairman of the Indian Space Commission and Secretary of the Indian Department of Space and Academician Roald Sagdeev, former Director of the Institute of Space Research of the Academy of Sciences of the Union of Soviet Socialist Republics.

Proceedings

12. Having been informed that the Committee's Rapporteur, Mr. Flavio Miragaia Perri (Brazil), had been assigned to a new post, the Committee, at its 366th meeting, elected Mr. Edmundo Sussumu Fujita (Brazil) as its new Rapporteur.

13. At the 367th meeting, the Chairman of the Committee, in his opening statement, summarized the work of the Committee's subsidiary bodies and outlined the work before the Committee. He stressed the need to increase international cooperation in the peaceful uses of outer space and to ensure that the benefits of such cooperation were shared by all countries and all people (see A/AC.105/PV.367).

14. At the 367th meeting, the Chief of the Office for Outer Space Affairs of the Secretariat made a statement reviewing the work of the Office during the previous year and the documentation before the Committee.

15. At its 367th to 369th meetings, on 16 and 17 June 1992, the Committee held a general exchange of views, in the course of which statements were made by the representatives of Argentina, Austria, Brazil, Bulgaria, Canada, Chile, China, Colombia, Cuba, Czechoslovakia, Ecuador, Egypt, France, Germany, Greece, Hungary, India, Indonesia, Iran (Islamic Republic of), Mexico, the Netherlands, Pakistan, Portugal, Romania, Sweden, Ukraine and the United States of America (see A/AC.105/PV.367-369).

16. The representatives of COSPAR, ESA, IAF, ILA, INTELSAT, and ISPRS, as well as the Expert on Space Applications of the Office for Outer Space Affairs, also made statements (see A/AC.105/PV.367, 368 and 371).

17. After considering the various items before it, the Committee, at its 378th meeting, on 26 June 1992, adopted its report to the General Assembly containing the recommendations and decisions set out below.

II. RECOMMENDATIONS AND DECISIONS

A. Ways and means of maintaining outer space for peaceful purposes (agenda item 6)

18. In accordance with paragraph 29 of General Assembly resolution 46/45, the Committee on the Peaceful Uses of Outer Space continued its consideration, as a matter of priority, of ways and means of maintaining outer space for peaceful purposes.

19. The Committee was of the view that the request of the General Assembly, in its resolution 46/45, to the Committee to consider, as a matter of priority, ways and means of maintaining outer space for peaceful purposes and to report thereon, showed the concern felt by the international community and the need to promote international cooperation in the peaceful uses of outer space, taking into account the needs of the developing countries. The Committee, through its work in the scientific, technical and legal fields, had an important role to play in ensuring that outer space was maintained for peaceful purposes. It was the firm belief of the members of the Committee that developments that would strengthen the role of the Committee in maintaining outer space for peaceful purposes should continue. The Committee had responsibilities relating to the strengthening of the international basis for the peaceful exploration and uses of outer space, which could cover, among other matters, further development of international space law, including, as appropriate, the preparation of international agreements governing various practical peaceful applications of the achievements of space science and technology. Strengthening international cooperation in the peaceful exploration and use of outer space also implied the need for the Committee itself to improve, whenever necessary, the methods and forms of its work.

20. The Committee agreed that a good way to broaden and deepen international cooperation in outer space was through international and regional programmes undertaken as part of universal endeavours such as International Space Year.

21. Some delegations expressed the view that the Committee should complement the work being done in bilateral and multilateral forums towards preventing an extension of the arms race into outer space and could provide substantive input to the discussions and negotiations in the Conference on Disarmament. In that connection, while recognizing the competence of the Conference on Disarmament on the questions relating to the prevention of an arms race in outer space, they also expressed the view that the Committee should be kept informed of the progress made by the Conference on the questions and that working contacts should be established between the two bodies. Those same delegations pointed out that no progress had been observed in the framework of the Conference on Disarmament on these issues. Some delegations further pointed out that the scope of the priority item on the agenda of the Committee went beyond purely disarmament areas to include, for example, transparency and confidence-building measures, where the Committee could make a useful contribution, particularly in view of the changing relationship between the major space Powers. Some delegations also expressed the view that the peaceful uses of outer space were inseparably linked to the non-peaceful uses and that the best way for the Committee to contribute to maintaining outer space for peaceful purposes was to promote international cooperation, observing the principle that the exploration and utilization of outer space

should be carried out for the benefit and in the interests of all States, taking into particular account the needs of developing countries. In this respect, they indicated that preambular paragraph 3 of General Assembly resolution 46/45 emphasized this idea.

22. Other delegations expressed the view that disarmament questions did not fall within the competence of the Committee. They pointed out that, within the United Nations, the question of the prevention of an arms race in outer space was within the exclusive competence of the First Committee of the General Assembly and of the Conference on Disarmament. Some of those delegations expressed the view that the Committee should avoid extraneous and divisive topics such as disarmament and concentrate on strengthening the scientific and technical content of its work and on efforts to broaden and deepen cooperation by all countries in outer space activities. They felt that it would be inappropriate to engage in an exchange of information between the two bodies and questioned the need to have contacts between them. Some delegations reiterated the view that the best way for the Committee to contribute to maintaining outer space for peaceful purposes was to promote international cooperation further by revitalizing its work and that of its subcommittees.

23. Some delegations were of the view that in pursuit of exploring various ways and means for maintaining outer space for peaceful purposes, the Committee should lay much stress on strengthening international cooperation in this regard. These delegations considered that the initiative taken by the Committee to examine in its Legal Subcommittee the question as to how the exploration and utilization of outer space should be carried out for the benefit and in the interest of all States, particularly developing States, represents an important step. Further taking into account the needs and interests of developing countries, these delegations recommended that such cooperation should facilitate guaranteed availability of space services, technology, and so forth.

24. The Committee took note of a working paper submitted by the Russian Federation (A/AC.105/L.195) on the Russian Space Agency.

B. Report of the Scientific and Technical Subcommittee on the work of its twenty-ninth session

Implementation of the recommendations of the Second United Nations Conference on the Exploration and Peaceful Uses of Outer Space (agenda items 7 and 9)

25. The Committee considered jointly agenda items 7 and 9, entitled "Report of the Scientific and Technical Subcommittee on the work of its twenty-ninth session" and "Implementation of the recommendations of the Second United Nations Conference on the Exploration and Peaceful Uses of Outer Space", respectively.

1. Report of the Scientific and Technical Subcommittee on the work of its twenty-ninth session

26. The Committee took note with appreciation of the report of the Scientific and Technical Subcommittee on the work of its twenty-ninth session (A/AC.105/513), covering the results of its deliberations on the items assigned to it by the General Assembly in its resolution 46/45.

2. Implementation of the recommendations of the Second United Nations Conference on the Exploration and Peaceful Uses of Outer Space

(a) Working Group of the Whole

27. The Committee noted with satisfaction that, in accordance with General Assembly resolution 46/45, the Subcommittee had given priority consideration to the item entitled "Implementation of the recommendations of the Second United Nations Conference on the Exploration and Peaceful Uses of Outer Space" and had re-established the Working Group of the Whole to evaluate the implementation of the recommendations of the Second United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE 82) 1/ under the chairmanship of Mr. Muhammad Nasim Shah (Pakistan).

28. The Committee noted with satisfaction that a number of reports related to the recommendations of UNISPACE 82 had been prepared in accordance with the recommendations of the Working Group of the Whole at its fifth session in 1991, as endorsed by the General Assembly in paragraph 10 of its resolution 46/45. The Committee also noted that further studies and reports would be prepared in accordance with the recommendations of the Working Group of the Whole at its sixth session, held in 1992.

29. The Committee noted that the Working Group of the Whole had reviewed the implementation of the recommendations of UNISPACE 82, had concluded that many of the recommendations were still not fully implemented and had made a number of recommendations concerning the further implementation of the recommendations of the Conference. The Committee endorsed the recommendations of the Working Group of the Whole, as contained in its report (A/AC.105/513, annex II). The Committee, noting the view of the Subcommittee that the budgetary allocations for the Programme on Space Applications for implementation of the recommendations of UNISPACE 82 had been meagre and inadequate in past years and that it had expressed its deep concern that the situation remained the same for the current year as well, requested the General Assembly to make an adequate allocation for the Programme on Space Applications in order to fully implement the recommendations of UNISPACE 82.

30. The Committee recommended that the Working Group of the Whole should be reconvened during the next session of the Scientific and Technical Subcommittee to continue its work.

31. The Committee, while expressing its appreciation to all Governments that had made or had expressed their intention of making contributions for the implementation of the recommendations of UNISPACE 82, took note of the disappointment expressed by the developing countries at the lack of financial resources to implement those recommendations fully.

(b) United Nations Programme on Space Applications

32. At the outset of the Committee's deliberations on this item, the United Nations Expert on Space Applications of the Office for Outer Space Affairs reviewed the activities carried out and planned under the Programme on Space Applications during the period 1991-1993. The Committee expressed its appreciation to the Expert on Space Applications for the effective manner in which he had implemented the Programme within the limited funds at his disposal.

33. The Committee continued to express its concern over the limited financial resources available for carrying out the Programme and appealed to Member States to support the Programme through voluntary contributions. The Subcommittee felt that the limited resources of the United Nations should be focused on the highest priority activities and noted that the Programme on Space Applications was the priority activity of the Office for Outer Space Affairs.

34. The Committee took note of the Programme on Space Applications, as set out in the report of the Subcommittee. The Committee was pleased to note that further progress was being made in the implementation of the Programme activities planned for 1992.

(i) Long-range fellowships for in-depth training

35. The Committee expressed its appreciation to the Governments of Austria, Brazil, China and the Russian Federation, as well as to ESA, for offering fellowships through the United Nations in 1991-1992 and to the Governments of Brazil and China as well as to ESA, for renewing their offers of fellowships for 1992-1993. The Committee also expressed its appreciation to the Government of Greece for its offer of fellowships.

(ii) United Nations workshops, training courses and seminars

36. As regards the United Nations workshops, training courses and seminars for 1992, the Committee expressed its appreciation to:

(a) The Governments of Ecuador and Japan, for co-sponsoring the United Nations Workshop on Space Technology for Resource Development and Environment Management (March 1992);

(b) The Government of Sweden, for having co-sponsored the Second United Nations/Sweden Training Course on Remote Sensing Education for Educators (May-June 1992);

(c) The Governments of Colombia and Costa Rica, as well as ESA and the Planetary Society, for co-sponsoring the United Nations/ESA/Planetary Society Workshop on Basic Space Science for Development (November 1992);

(d) The Government of the United States, for co-sponsoring the International Conference on Satellite Remote Sensing for Resource Management, Environmental Assessment and Global Change Studies (August 1992);

(e) The Government of Germany and the Carl Duisberg Society, Berlin, for co-sponsoring the Fourth United Nations Training Course on Remote Sensing Applications to Geological Sciences (September-October 1992);

(f) The Government of the Republic of Korea for co-sponsoring the Workshop on Communications Technology for Development (November 1992);

(g) ESA, for co-sponsoring the Seventh United Nations/FAO/WMO/ESA Course on the Use of Visible, Infrared and Radar Systems in Hydrological and Agrometeorological Applications (October 1992).

37. The Committee endorsed the programme of United Nations workshops, training courses and seminars proposed for 1993 as outlined by the United Nations Expert on Space Applications of the Office for Outer Space Affairs in his report (see A/AC.105/497, para. 29 (a)-(h)), including two additional activities indicated in his statement to the Committee, and recommended those activities for approval by the General Assembly. In so doing, the Committee welcomed the invitations from:

(a) The Government of Greece to host and co-sponsor the United Nations Seminar on Communications for Development, for the benefit of countries in the Mediterranean and adjacent areas;

(b) The Economic and Social Commission for Western Asia (ESCWA) to co-sponsor the United Nations Workshop on the Use of Space Techniques for Monitoring and Control of the Desert Environment, for the benefit of ESCWA member States;

(c) The Government of Indonesia to host and co-sponsor the United Nations Regional Conference on Space Technology for Sustainable Development, for the benefit of ESCAP States members of the Economic and Social Commission for Asia and the Pacific (ESCAP);

(d) The Economic Commission for Africa (ECA) to co-sponsor the United Nations/ECA Space Conference on Africa: Environmental and Natural Resources Information and Africa's Management Needs;

(e) The Government of Mexico to host and co-sponsor the United Nations/Office of the United Nations Disaster Relief Coordinator (UNDRO) Regional Workshop on Space Technology to Combat Natural Disasters, for the benefit of Member States in the Economic Commission for Latin America and the Caribbean (ECLAC) region;

(f) The Government of Germany to host and co-sponsor the United Nations Regional Training Course on Remote Sensing Applications to Geological Sciences for the benefit of the ESCAP region;

(g) ESA to host and co-sponsor the United Nations Training Course on Monitoring Natural and Renewable Energy Resources and the Environment in the Sahel Region, funded by the Government of Italy, for the benefit of

French-speaking African countries; the course is being organized jointly with the United Nations Department for Economic and Social Development;

(h) The Government of Sweden to host and co-sponsor the Third United Nations/Sweden Training Course on Remote Sensing Education for Educators.

38. The Committee also noted with appreciation the financial contributions of $9,000 (including $4,500 for International Space Year activities) from the Government of Austria, $7,000 from the Government of Greece, $18,000 from the Government of Pakistan and $75,000 from ESA in support of the 1991 activities of the Programme on Space Applications, and the contributions of $20,000 from the Government of Austria, $7,000 from the Government of Greece, $15,000 from the Government of Pakistan and $50,000 from ESA in support of the 1992 activities. The Committee also noted with appreciation the provision of experts, as instructors and speakers in the activities of the Programme on Space Applications, by the host countries and other countries. The Committee also noted the financial and other assistance provided by ESCAP, FAO, UNDP, UNESCO, WMO and ESA. The Committee further noted with appreciation a voluntary contribution of $30,000 from the Government of China in support of the activities of the Programme and of International Space Year.

(iii) Centres for space science and technology education

39. The Committee noted with satisfaction that a number of Member States in the ECA, ECLAC, ESCAP and ESCWA regions had expressed interest in hosting the proposed regional centres for space science and technology education, based on existing national or regional educational institutions in developing countries, to promote the development of indigenous capabilities. The Committee also noted with appreciation an offer to host a centre for the Mediterranean region. The Committee welcomed the report on the matter entitled "Centres for Space Science and Technology" (A/AC.105/498) and urged Member States to consider providing voluntary contributions to support that effort.

40. The Committee expressed its appreciation to the Governments of Canada and Spain for each having sent an expert to participate in an evaluation mission to Argentina, Brazil, Chile and Mexico in May 1992 for the establishment of a centre in the ECLAC region. The Committee noted that further missions to other regions were being planned.

(iv) Technical advisory services

41. The Committee noted that the Programme had provided or would provide the following technical advisory services: to the Government of Ecuador in promoting regional use of the remote-sensing ground receiving station at Cotopaxi, Ecuador; and to the Government of the Islamic Republic of Iran for the organization of a Seminar on Remote Sensing of the Environment and Earth Resources.

42. The Committee also noted that the Programme was collaborating with ESA in a follow-up of the United Nations/ESA International Space Year activity on the use of remote-sensing data being provided by ESA to four African countries covered by the receiving stations at Maspalomas, Canary Islands, Spain, and Fucino, Italy. The Committee further noted that the Programme was

collaborating with ESA in reviewing the training needs of the participating African institutions.

43. The Committee took note with interest of the plans by the Government of Chile to host the Second Space Conference of the Americas, at Santiago, in January 1993 and expressed its appreciation to the Programme for providing technical advisory services in support of the Conference.

(v) Promotion of greater cooperation in space science and technology

44. Regarding the promotion of greater cooperation in space science and technology, the Committee noted with satisfaction that the United Nations Programme on Space Applications was co-sponsoring the following activities:

(a) A symposium entitled "Space Technology in Developing Countries - Making It Happen", co-sponsored by COSPAR, IAF and the American Institute for Aeronautics and Astronautics (AIAA). The symposium, to be held in Washington, D.C., immediately prior to the World Space Congress, was a follow-up to the Workshop on Space Technologies for Developing Countries, which was co-sponsored by the Government of Canada and IAF in 1991;

(b) A Workshop on Data Analysis Methods and Applications for developing countries, co-sponsored by ISPRS, at the 1992 ISPRS Congress;

(c) Symposia and workshops in conjunction with the IAF Congress to be held at Graz, Austria, in 1993 and with the COSPAR and ISPRS meetings to be held in 1994 and 1996, respectively.

(c) International space information service

45. With regard to the international space information service, the Committee noted with satisfaction the publication of the third volume of "Seminars of the United Nations Programme on Space Applications" (A/AC.105/492), containing selected papers from the seminars, workshops and training courses of the 1991 activities of the Programme on Space Applications, "Highlights in Space" (A/AC.105/515), based on annual reports prepared by COSPAR (A/AC.105/502) and IAF (A/AC.105/503) and submitted to the Scientific and Technical Subcommittee, and the Directory of Information Systems on Space Science and Technology (A/AC.105/517).

(d) Coordination of space activities within the United Nations system and inter-agency cooperation

46. With regard to coordination of outer space activities within the United Nations system and inter-agency cooperation, the Committee noted the request of the General Assembly, contained in its resolution 46/45, to all organs, organizations and bodies of the United Nations system to cooperate in the implementation of the recommendations of UNISPACE 82.

47. The Committee further noted with appreciation that the Scientific and Technical Subcommittee had continued to stress the necessity of ensuring continuous and effective consultations and coordination in the field of outer space activities among organizations within the United Nations system. The Committee noted with satisfaction that the thirteenth Ad Hoc Inter-Agency

Meeting on Outer Space Activities had been held in 1991 (see ACC/1991/PG/12) and that a report on coordination of outer space activities within the United Nations system had been submitted to the Scientific and Technical Subcommittee (A/AC.105/491 and Corr.1). The Committee also noted with appreciation that the fourteenth Inter-Agency Meeting on Outer Space Activities would be held in October 1992 at UNESCO headquarters in Paris.

48. The Committee noted with appreciation the participation in all stages of its work and in that of its Subcommittee by representatives of United Nations bodies, the specialized agencies and other international organizations. The Committee found the reports submitted by those bodies helpful in enabling it and its subsidiary bodies to fulfil their role as a focal point for international cooperation, especially with respect to the practical applications of space science and technology in developing countries.

(e) Regional and interregional cooperation mechanisms

49. Regarding regional and interregional cooperation mechanisms, the Committee noted with satisfaction that, pursuant to General Assembly resolution 46/45, paragraph 15, and the recommendations of UNISPACE 82, the Secretariat had continued to seek to strengthen regional mechanisms of cooperation by organizing regional workshops and training courses as part of the United Nations Programme on Space Applications and by providing technical assistance to ECA, the Sociedad de Especialistas Latinoamericanos en Percepción Remota (SELPER) and to other regional activities in Africa and Latin America, as well as by promoting the establishment of regional centres for space science and technology education.

50. The Committee noted the contributions made by other international organizations towards the implementation of the recommendations of UNISPACE 82. In particular, the Committee noted that UNESCO had strengthened its remote-sensing programmes, including an initiative to support the establishment of satellite data centres (see A/AC.105/519); ESA was continuing its space science and applications programmes, including activities in cooperation with developing countries; and INTELSAT was continuing to develop its system of international communication satellites for use by all countries and was expanding its training programme for developing countries.

(f) Other

51. The Committee noted a proposal that a third UNISPACE Conference should be organized in 1995, preferably to be held in a developing country, with a view to consolidating the momentum provided by International Space Year and to evolving follow-up actions and mechanisms further to broaden the scope of international cooperation as well as to promote increased participation of all developing countries in space activities. The Committee recommended that Member States might discuss the possibility of holding a third UNISPACE Conference in the future under its agenda item "Other matters" during its next sessions.

3. Matters relating to remote sensing of the Earth by satellites, including, inter alia, applications for developing countries

52. The Committee noted that, in accordance with General Assembly resolution 46/45, the Subcommittee had given priority consideration to matters relating to remote sensing of the Earth by satellites.

53. The Committee also noted that, in the course of the debate in the Subcommittee, delegations had reaffirmed their basic positions relating to remote sensing, which had been reflected in the reports of the previous sessions of the Subcommittee.

54. The Committee recognized the importance of continuing international efforts to ensure the continuity, compatibility and complementarity of systems for remote sensing of the Earth and to promote cooperation through regular meetings between satellite operators, ground station operators and users.

55. The Committee recognized the example of international cooperation given by the free distribution of meteorological information. All countries and agencies were urged to continue that practice. Some delegations also urged that similar arrangements should be made for distribution of other remote-sensing information.

56. Some delegations expressed serious concern over the commercialization of remote-sensing activities and suggested that the prices of remote-sensing data products and access fees for data reception should be reduced significantly so as to make them affordable for the developing countries and enable the latter to benefit fully from the use of remote-sensing technology.

57. The Committee endorsed the recommendation of the Subcommittee that, recalling General Assembly resolution 41/65 of 3 December 1986 by which the Assembly had adopted the Principles relating to Remote Sensing of the Earth from Outer Space, it would continue, at its thirtieth session, its discussion on remote-sensing activities conducted in accordance with those Principles.

58. The view was expressed that the Committee should undertake discussions on the development of the Principles into some form of international agreement.

59. The Committee endorsed the recommendation of the Subcommittee that the item should be retained on its agenda as a priority item for the next session.

4. Use of nuclear power sources in outer space

60. The Committee noted that, in accordance with General Assembly resolution 46/45, the Scientific and Technical Subcommittee had reconvened the Working Group on the Use of Nuclear Power Sources in Outer Space to enable it to resume its work.

61. The Committee noted that the Subcommittee had adopted the report of the Working Group on the Use of Nuclear Power Sources in Outer Space as contained in annex III to the report of the Subcommittee (A/AC.105/513).

62. The Committee endorsed the recommendation of the Subcommittee that Member States should be invited to report to the Secretary-General on a regular basis with regard to national and international research concerning the safety of nuclear-powered satellites.

63. The Committee endorsed the recommendation of the Subcommittee that further studies should be conducted on the problem of the collision of nuclear power sources with space debris and that the Subcommittee should be kept informed of the results of such studies.

64. Noting the need for early review and possible revision of the principles relevant to the use of nuclear power sources in outer space, the Committee recommended that the Scientific and Technical Subcomittee should reconvene the Working Group on nuclear power sources to give further consideration to the question.

65. The Committee endorsed the recommendation of the Subcommittee that it should continue consideration of the item at its next session.

5. Space transportation systems

66. The Committee noted that, in accordance with General Assembly resolution 46/45, the Subcommittee had continued consideration of the item relating to space transportation systems and their implications for future activities in space.

67. The Committee took note of the progress being achieved in the various programmes in operation or planned by China, India, Japan, the Russian Federation, Ukraine, the United Kingdom, the United States and ESA.

68. The Committee endorsed the recommendation of the Subcommittee to continue consideration of the item at its next session.

6. Examination of the physical nature and technical attributes of the geostationary orbit; examination of its utilization and applications, including, inter alia, in the field of space communications, as well as other questions relating to space communications developments, taking particular account of the needs and interests of developing countries

69. The Committee noted that, in accordance with General Assembly resolution 46/45, the Subcommittee had continued consideration of the item relating to the geostationary orbit.

70. The Committee noted that delegations had reiterated and elaborated on the views concerning the question of the geostationary orbit that had been expressed at earlier sessions and reflected in earlier reports of the Committee and its two subcommittees.

71. The Committee expressed its appreciation to ITU for submitting its thirty-first annual progress report on telecommunication and the peaceful uses of outer space (A/AC.105/518). Some delegations, in their statements, stressed the important technical scope of the work of ITU, while drawing attention to the competence of the Committee on the Peaceful Uses of Outer Space in preparing policy decisions that refer to the geostationary orbit.

72. The Committee endorsed the recommendation of the Subcommittee that it should continue consideration of the item at its next session.

7. Matters relating to life sciences, including space medicine; progress in national and international space activities related to the Earth environment, in particular progress in the geosphere-biosphere (global change) programme; matters relating to planetary exploration; matters relating to astronomy

73. The Committee noted that, in accordance with General Assembly resolution 46/45, the Subcommittee had continued to consider the items concerning matters relating to life sciences, including space medicine; progress in national and international space activities related to the Earth environment, in particular progress in the geosphere-biosphere (global change) programme; matters relating to planetary exploration; and matters relating to astronomy.

74. The Committee noted with satisfaction that a number of special presentations had been made to the Subcommittee on those items by specialists from various countries and a paper (A/AC.105/C.1/L.182) as well as a study (A/AC.105/500) had been circulated.

75. The Committee endorsed the recommendations of the Subcommittee to continue consideration of the item at its next session.

8. Themes fixed for special attention at the 1992 and 1993 sessions of the Scientific and Technical Subcommittee

76. The Committee noted that, in accordance with General Assembly resolution 46/45, the Subcommittee had considered the theme fixed for special attention at the 1992 session of the Scientific and Technical Subcommittee: "Space technology and the protection of the Earth's environment: development of endogenous capabilities, in particular in the developing countries and in the context of International Space Year".

77. The Committee noted with satisfaction that, in accordance with General Assembly resolution 46/45, COSPAR and IAF, as part of the Subcommittee's special session to mark International Space Year, had conducted a symposium on the theme. The Committee expressed its appreciation to COSPAR and IAF for their generous support of the work of the Subcommittee.

78. The Committee noted the important contributions of satellites for monitoring the Earth environment and for promoting and enhancing the space capabilities of developing countries.

79. The Committee endorsed the recommendation of the Subcommittee that the new theme fixed for special attention at the 1993 session of the Subcommittee should be "Space-based communication: the expansion of current services and increased understanding of new systems and the services they will make possible". It also endorsed the recommendation of the Subcommittee that COSPAR and IAF, in liaison with Member States, should be invited to arrange a symposium on that theme, with as wide a participation as possible, to be held during the first week of the Subcommittee's session to complement discussions within the Subcommittee on the special theme.

80. The Committee had before it a summary of the scientific and technical presentations made during the twenty-ninth session of the Scientific and Technical Subcommittee (A/AC.105/516).

81. Some delegations, while recognizing the significance of the scientific and technical presentations to the Subcommittee, expressed the view that, as an intergovernmental forum, the Subcommittee should give priority to discussing policies and guidelines for international cooperation in space activities and providing agreed technical parameters for the development of international space law.

9. International Space Year

82. The Committee expressed its appreciation to the participants of the panel discussion on the future of international cooperation in space held on 15 June 1992, in accordance with General Assembly resolution 46/45, to mark International Space Year. The Committee also expressed its appreciation to COSPAR and IAF for sponsoring and assisting in the organization of the special session of the Scientific and Technical Subcommittee to celebrate International Space Year.

83. The Committee took note of the programme for the participation of the United Nations in International Space Year (A/AC.105/445 and Add.1-8) and noted that a guidebook describing the programme had been distributed to Member States.

84. The Committee noted that the participation of the United Nations in International Space Year was funded by voluntary contributions. The Committee expressed its appreciation to the Governments of Austria, China, Greece, Japan, Sweden and the United States as well as to ESA, which had made voluntary contributions for that purpose. The Committee urged other Member States, international organizations and other funding sources to support further scientific and technical activities in cooperation with the United Nations as part of International Space Year.

85. The Committee noted that a focus of International Space Year activities was the use of space technology for studying and monitoring the environment. It also noted that the General Assembly, in resolution 46/45, had reiterated its recommendation that Member States, in planning their activities for International Space Year, should consider ways in which those activities could complement the efforts of the United Nations Conference on Environment and Development. The Committee noted the cooperation of the Office for Outer Space Affairs in the preparations for the Conference.

86. The Committee noted the wide variety of national and international programmes, those already undertaken and those being planned, as part of International Space Year, including the activities coordinated through the Space Agency Forum on International Space Year, COSPAR, IAF and ISPRS.

87. It noted in particular the programme for the World Space Congress being organized jointly by COSPAR and IAF and the importance of including all countries in those programmes and of planning activities that would continue beyond 1992. It further noted that the United Nations was working with the Congress organizers in increasing the representation of speakers and participants from developing countries.

88. The Committee agreed that International Space Year provided an opportunity to strengthen and expand international cooperation in the peaceful uses of outer space and noted the importance of including all countries in the activities of the Year. The Committee noted that that was particularly important considering that International Space Year coincided with the tenth anniversary of UNISPACE 82.

89. The Committee welcomed a display of the artwork of the World Gratitude Day - International Children's Poster Exhibit on the theme of International Space Year to be organized in cooperation with the World Gratitude Day programme during September 1992 at United Nations Headquarters.

90. The Committee noted that the United Nations, in the context of International Space Year, was conducting an essay contest and issuing a commemorative stamp on the theme of International Space Year, and that efforts were being made, subject to the availability of additional voluntary contributions, to prepare a series of video programmes on International Space Year themes. It further noted that Member States were participating in and contributing to some of those activities.

91. The Committee noted that generous contributions were needed from Member States, international organizations and other funding sources in order successfully to execute International Space Year activities through the United Nations Programme on Space Applications, since the Programme was dependent on voluntary contributions for most of its activities.

92. The Committee took note of the national and international activities being planned for the remainder of the Year, including activities planned through the Space Agency Forum on International Space Year, the plans of COSPAR and IAF for celebrating 1992 as International Space Year and activities relating to "Mission to Planet Earth". The Committee noted the importance of the participation of all countries, in particular developing countries, in those activities.

93. The Committee recommended that the United Nations should actively encourage the continuation of activities initiated for International Space Year and further support their spread to increase the involvement of more nations.

94. The Committee recognized with appreciation the contribution of the late United States Senator Spark Matsunaga, who initiated the proposal for

International Space Year, including a world-wide programme of cooperative space activities.

10. Space and Earth environment

95. The Committee noted that the General Assembly, in its resolution 46/45, had recommended that more attention should be paid to all aspects related to the protection and preservation of the outer space environment, especially those potentially affecting the Earth's environment. The recently completed United Nations Conference on Environment and Development had further indicated the need to pay more attention to that issue.

96. The Committee also noted that the General Assembly, in the same resolution, had considered that it was essential that Member States should pay more attention to the problem of collisions of space objects with space debris and other aspects related to space debris and had called for, among other things, the continuation of national research on the question. The General Assembly, in the same resolution, had also considered that space debris could be an appropriate subject for discussion by the Committee in the future.

97. The Committee agreed that there was a need for further research concerning space debris, for the development of improved technology for the monitoring of space debris and for the compilation and dissemination of data on space debris. The Committee also noted the importance of international cooperation in addressing those issues.

98. The Committee agreed that information on national research on space debris should, to the extent possible, be provided to the Subcommittee, in order to allow the Subcommittee to follow that area more closely. In that connection, the Committee took note of the information on national research submitted by Member States (A/AC.105/510 and Add.1-3) pursuant to the request of the Secretary-General.

99. Some delegations expressed the view that the question of space debris should be included on the Subcommittee's agenda at its next session, allowing for a general exchange of views and information. The view was also expressed that, while recognizing the importance of the subject, further national research on the problem of space debris was still required.

100. Some delegations were of the view that, as many studies and efforts are already being carried out by various space agencies, it would be a very fitting gesture in the light of International Space Year to indicate the common concern and to cooperate by agreeing to include the subject of space debris on the agenda of the Committee or its Scientific and Technical and Legal Subcommittees from the very next session.

101. The view was expressed, pointing out the urgent need to converge on strategies to minimize the risks of collisions in outer space, that under the auspices of the Committee, a team of international experts should be constituted to evolve acceptable technical strategies and recommended methods for freely sharing such technologies among all space-faring nations.

102. The Committee noted the importance of satellite remote sensing for monitoring the Earth's environment, and in particular for studying and monitoring global change.

103. The Committee agreed that the Secretariat should prepare, for the Committee's next session, an analytical report on the role that the Committee could play in view of the decisions and recommendations of the United Nations Conference on Environment and Development.

C. Report of the Legal Subcommittee on the work of its thirty-first session (agenda item 8)

104. The Committee took note with appreciation of the report of the Legal Subcommittee on the work of its thirty-first session (A/AC.105/514), which contained the results of its deliberations on the items assigned to it by the General Assembly in its resolution 46/45.

1. The elaboration of draft principles relevant to the use of nuclear power sources in outer space, with the aim of finalizing the draft set of principles at the current session

105. The Committee noted that the Subcommittee, in accordance with General Assembly resolution 46/45, had continued to consider this item through its Working Group under the chairmanship of Mr. F. Cede (Austria).

106. The Committee noted the work carried out by the Subcommittee and the Working Group, as reflected in their reports (A/AC.105/514, paras. 22-28, and annex I).

107. The Committee noted that the Subcommittee had agreed that two "working non-papers" as set forth in the report of the Working Group (A/AC.105/514, annex I, paras. 18 and 19) could constitute a contribution to meeting the aim set out in General Assembly resolution 46/45 for finalizing the principles on nuclear power sources.

108. The Committee held informal consultations on the draft principles during its session.

109. During the consultations, the Chairman of the Committee submitted a text containing a draft set of principles for consensus recommendation by the Committee for adoption by the General Assembly (A/AC.105/L.198).

110. The Committee was able to reach consensus on the basis of the Chairman's text. The consensus text, as approved by the Committee, is attached as an annex to the present report.

111. The Committee recommended that the General Assembly, at its forty-seventh session, adopt the set of principles relevant to the use of nuclear power sources in outer space as set out in the annex to the present report.

112. Noting the need for early review and possible revision of the principles, the Committee recommended that the Legal Subcommittee, through its Working Group, should consider the question of early review and possible revision of the principles relevant to the use of nuclear power sources in outer space.

2. Matters relating to the definition and delimitation of outer space and to the character and utilization of the geostationary orbit, including consideration of ways and means to ensure the rational and equitable use of the geostationary orbit without prejudice to the role of the International Telecommunication Union

113. The Committee noted that the Subcommittee, in accordance with General Assembly resolution 46/45, had continued to consider this item through its Working Group under the chairmanship of Mr. E. Zawels (Argentina).

114. The Committee noted the work carried out by the Subcommittee and the Working Group, as reflected in their reports (A/AC.105/514, paras. 29-35, and annex II).

115. The Committee noted that a variety of views had been expressed on the question of the definition and delimitation of outer space. Those views were elaborated on and reiterated during the current session of the Committee.

116. Some delegations reiterated the view that the question of delimitation was part of the more comprehensive legal question of the applicability of treaties, that it was necessary to have a conventionally defined boundary between air and outer space and that the Subcommittee should continue to consider the question, with a view to establishing such a boundary. Other delegations reiterated the view that the need for such a definition or delimitation had not yet been established and that attempts to establish prematurely a boundary between air space and outer space might complicate and impede progress in the peaceful exploration and use of outer space.

117. Some delegations, while recognizing the fact that the characteristics and the modes of usage of space objects have been undergoing changes, noted that there have been difficulties in finding common agreement on various issues and there have been questions on the very need for definitions. However, in the opinion of some of these delegations, such difficulties should neither deter the Committee from arriving at a common understanding, nor leave the questions to be settled by eventualities.

118. Some delegations reiterated the view that the Legal Subcommittee, in its consideration of the item, could consider international legal aspects of future use of aerospace objects. The Committee noted the working paper on the subject submitted by the Russian Federation (A/AC.105/514, annex IV, sect. B) and agreed that the approach suggested in the working paper was positive and could form a suitable basis, among others for future discussions.

119. The Committee took note of the deliberations on the question of the geostationary orbit as contained in the report of the Legal Subcommittee. The Committee noted that an exchange of views had taken place on that subject, particularly on the basis of the ideas formulated in the "working non-paper"

(A/AC.105/514, annex II, para. 24). Some delegations felt that the "working non-paper" could provide a valuable basis for further discussions. The Committee noted that the authors of the "working non-paper" would submit a revised version to the Subcommittee at its next session.

120. Some delegations stressed the generally accepted view that the geostationary orbit was part of outer space and that its legal status was subject to all provisions of the 1967 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies [General Assembly resolution 2222 (XXI)] and to the appropriate rules of ITU, which had the status of a treaty.

121. Some delegations reiterated the view that the geostationary orbit, because of its particular characteristics, required a special legal regime to regulate access and utilization by all States, taking into account the needs of developing countries. The view was also expressed that such a legal regime should also take into consideration the particular situation of the equatorial countries.

122. Some delegations reiterated the view that the roles of ITU and of the Subcommittee were complementary and that the Subcommittee could contribute to the establishment of a special legal regime to regulate the use of the geostationary orbit. Other delegations reiterated the view that ITU was the appropriate body to address questions concerning the use of the geostationary orbit and was addressing those questions effectively.

123. Some delegations reiterated the view that the equitable utilization of the geostationary orbit requires the creation of a sui generis legal regime, which would put in place, inter alia, a system of preferential rights in cases of competing requirements, with preference given to developing countries, as set out in the ITU conventions, and to those countries that have had no previous access to the orbit, when their coexistence is radio-electrically incompatible.

124. Some delegations expressed the view that the problem of space debris is particularly relevant in the geostationary orbit. In this connection, they expressed the view that the Subcommittee should consider the question of non-functional space objects in the geostationary orbit.

125. The view was expressed that future consideration of the issue could be based on general acknowledgement of the following three principles: (a) the geostationary orbit was inseparable from outer space; (b) the 1967 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and other Celestial Bodies, was fully applicable to the geostationary orbit; and (c) the geostationary orbit was a unique natural phenomenon which justified the development of special legal regulations to govern its use.

126. The view was also expressed that the geostationary orbit had unique spatial properties with respect to space activities.

127. The Committee recommended that the Legal Subcommittee continue consideration of the item at its next session.

3. Consideration of the legal aspects related to the application of the principle that the exploration and utilization of outer space should be carried out for the benefit and in the interests of all States, taking into particular account the needs of developing countries

128. The Committee noted that the Subcommittee, in accordance with General Assembly resolution 46/45, had continued to consider this item through its Working Group under the chairmanship of Mr. R. González (Chile).

129. The Committee noted the constructive work carried out by the Subcommittee and the Working Group, as reflected in their reports (A/AC.105/514, paras. 36-43, and annex III).

130. The Committee noted that some Member States, in response to two notes verbales from the Secretary-General, had provided the Subcommittee with information relating to this agenda item (A/AC.105/C.2/15 and Add.1-13 and A/AC.105/C.2/16 and Add.1-10). In this connection, the Committee took note of a background paper (A/AC.105/C.2/L.187) prepared by the Chairman of the Working Group summarizing in an analytical manner the views and information contained in the replies of Members States to the two notes verbales of the Secretary-General.

131. The Committee took note with satisfaction of the discussion based on working paper A/AC.105/C.2/L.182, as well as of the positive reaction of the co-sponsors to comments made by other delegations, which will be taken duly into account in future discussions.

132. Some delegations expressed the view that it was essential to elaborate legal principles which would ensure that all countries could have access to, and benefit from, outer space activities. They felt that the draft principles on the subject presented by several developing countries in working paper A/AC.105/C.2/L.182 had been carefully drafted to take into account those concerns, as well as the interests of both developed and developing countries. They believed that the debate on the basis of that paper at the last session of the Subcommittee was very interesting, useful and constructive.

133. Some delegations expressed the view that future legal principles relating to the item should address the existing inequalities between the technologically advanced space nations and the developing countries without the infrastructure, resources and technological capability to benefit from space exploration and utilization. They felt that those principles should emphasize the development of indigenous space capabilities, particularly in developing countries, as well as ensuring access to space resources and technology and the widest possible diffusion of the benefits of space activities among the peoples of the world.

134. Some delegations expressed the view that the item under discussion must be the point of departure in order to establish a new international legal framework. Other delegations expressed the view that the new item provided only for an exchange of views on the subject and did not provide a mandate for the negotiation of a new international legal framework.

135. The view was expressed that the paper of the Chairman of the Working Group (A/AC.105/C.2/L.187) was an important contribution to the work on the item and should be discussed at the next session of the Subcommittee in order to draw conclusions from information contained in it. Other delegations expressed the view that while the document was very useful, it should be considered as one contribution within the overall framework of the consideration of the question of space benefits, together with other relevant documents, and that the discussions on working paper A/AC.105/C.2/L.182 flowed logically from the Chairman's working paper.

136. The Committee recommended that the Legal Subcommittee should continue the consideration of the item at its next session.

D. Spin-off benefits of space technology: review of current status (agenda item 10)

137. In accordance with paragraph 30 of General Assembly resolution 46/45, the Committee took up the consideration of the above item.

138. The Committee agreed that spin-offs of space technology were yielding substantial benefits in many fields. The Committee noted that spin-offs of space technology were providing new techniques for the field of industrial measurement and control, image and data processing, non-destructive testing, temperature control and vacuum systems, computer systems, special materials and chemicals, food safety, water treatment and refrigeration.

139. The Committee noted that the importance of spin-off benefits was growing rapidly. The Committee also noted the importance of international cooperation in developing spin-off benefits of space technology and in ensuring that all countries, in particular developing countries, had access to those benefits.

140. The Committee agreed that there was a need to examine ways to strengthen and enhance international cooperation in the field of spin-off benefits of space technology, through, inter alia, improved means of providing access to spin-offs for all countries, giving particular attention to those spin-offs which could address the social and economic needs of developing countries.

141. The Committee took note of working papers on spin-off benefits of space technology submitted by China (A/AC.105/L.194) and the Russian Federation (A/AC.105/L.197).

142. Some delegations expressed the view that the United Nations could contribute to the development of improved procedures for disseminating spin-off benefits. They felt that the question of spin-offs was linked to the consideration in the Legal Subcommittee of the principle that the exploration and utilization of outer space should be carried out for the benefit and in the interests of all States, taking into particular account the needs of developing countries.

143. The Committee recommended that the United Nations Programme on Space Applications consider including in at least one of its training courses, seminars or expert meetings each year the subject of the promotion of spin-off benefits from space.

144. The Committee reiterated its recommendation that space agencies which are actively involved in a wide spectrum of space activities and applications should consider allocation of at least a small portion of their budgets to promote spin-off benefits in various countries.

145. Some delegations emphasized the need to consider cooperation among countries that are highly developed in space technology and countries that are not so developed by complementing each other's efforts in specific projects. In this context, those delegations considered that the United Nations could promote these kinds of interactions.

146. The Committee recommended that it continue its consideration of the item at its next session.

E. Other matters

147. The Committee noted with appreciation the participation in its work and that of its Subcommittees by the representatives of FAO, IAEA, ITU, WMO, UNESCO, UNIDO, ESA, INTELSAT, INTERCOSMOS, INTERSPUTNIK, COSPAR, IAF, ILA and ISPRS. The Committee expressed its appreciation to those organizations that had submitted reports on their activities and requested that concerned organizations continue to keep it informed of their activities relating to the peaceful uses of outer space.

148. The Committee recommended that the Secretariat should invite Member States to submit annual reports on their space activities. In addition to information on national and international space programmes, the reports could include information in response to requests from the Working Group of the Whole as well as information on spin-off benefits of space activities and other topics as requested by the Committee and its subsidiary bodies.

F. Future work

149. The Committee noted the views expressed by the Scientific and Technical Subcommittee, as contained in paragraphs 113 to 116 of its report (A/AC.105/513), and endorsed the recommendations contained in those paragraphs concerning the agenda of the thirtieth session of the Subcommittee.

150. Some delegations felt that the Scientific and Technical Subcommittee should be invited to review its agenda and, in view of the limited time available, reduce the number of agenda items considered at each session, perhaps by discussing some items every other year.

151. Regarding the agenda of the Legal Subcommittee, the Committee recommended that the Subcommittee, at its thirty-second session, should:

(a) Consider, through its Working Group, the question of early review and possible revision of the principles relevant to the use of nuclear power sources in outer space;

(b) Continue, through its Working Group, its consideration of matters relating to the definition and delimitation of outer space and to the

character and utilization of the geostationary orbit, including consideration of ways and means to ensure the rational and equitable use of the geostationary orbit without prejudice to the role of ITU;

(c) Continue, through its Working Group, consideration of the legal aspects related to the application of the principle that the exploration and utilization of outer space should be carried out for the benefit and in the interests of all States, taking into particular account the needs of developing countries.

152. The Committee recalled its recommendation that the Legal Subcommittee, on a permanent basis, should rotate each year the order of consideration of substantive agenda items.

153. The Committee took note of the measures that had been adopted at the thirty-first session of the Legal Subcommittee in order to improve utilization of conference services. The Committee endorsed the agreement of the Subcommittee that a similar organization of work would serve as the basis for organizing the work of the Subcommittee's thirty-second session.

154. The Committee recognized the unique opportunity for the Committee to play an active role, where possible, in implementing relevant recommendations of the United Nations Conference on Environment and Development and invited Member States to submit views in time before the next session of the Committee for inclusion in the report to be prepared by the Secretariat pursuant to paragraph 103 above.

G. Schedule of work of the Committee and its subsidiary bodies

155. The Committee indicated the following tentative timetable for 1993:

	Dates	Site
Scientific and Technical Subcommittee	16-26 February	New York
Legal Subcommittee	22 March-8 April	New York
Committee on the Peaceful Uses of Outer Space	7-18 June	New York

H. Tribute

156. On the occasion of the appointment of the Rapporteur of the Committee, Mr. Flavio Miragaia Perri, to his new function as Executive Secretary of the National Working Group for the United Nations Conference on Environment and Development, the members of the Committee expressed their sincere congratulations and deep gratitude for his many years of dedicated service to the Committee.

Notes

1/ Report of the Second United Nations Conference on the Exploration and Peaceful Uses of Outer Space, Vienna, 9 to 21 August 1982 (A/CONF.101/10 and Corr.1 and 2).

ANNEX

Set of principles recommended for adoption by the General Assembly at its forty-seventh session

PRINCIPLES RELEVANT TO THE USE OF NUCLEAR POWER SOURCES IN OUTER SPACE

Preamble

The General Assembly,

Recognizing that for some missions in outer space nuclear power sources are particularly suited or even essential due to their compactness, long life and other attributes,

Recognizing that the use of nuclear power sources in outer space should focus on those applications which take advantage of the particular properties of nuclear power sources,

Recognizing that the use of nuclear power sources in outer space should be based on a thorough safety assessment, including probabilistic risk analysis, with particular emphasis on reducing the risk of accidental exposure of the public to harmful radiation or radioactive material,

Recognizing the need, in this respect, for a set of principles containing goals and guidelines to ensure safe use of nuclear power sources in outer space,

Affirming that this set of Principles applies to nuclear power sources in outer space devoted to generation of electric power on board space objects for non-propulsive purposes, which have characteristics generally comparable to those of systems used and missions performed at the time of the adoption of the Principles,

Recognizing that this set of Principles will require future revision in view of emerging nuclear power applications and of evolving international recommendations on radiological protection,

Adopts the Principles Relevant to the Use of Nuclear Power Sources in Outer Space as set forth below.

Principle 1. Applicability of international law

Activities involving the use of nuclear power sources in outer space shall be carried out in accordance with international law, including in particular the Charter of the United Nations and the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies. a/

---

a/ General Assembly resolution 2222 (XXI), annex.

Principle 2. Use of terms

1. For the purpose of these Principles, the terms "launching State" and "State launching" mean the State which exercises jurisdiction and control over a space object with nuclear power sources on board at a given point in time relevant to the principle concerned.

2. For the purpose of principle 9, the definition of the term "launching State" as contained in that principle is applicable.

3. For the purposes of principle 3, the terms "foreseeable" and "all possible" describe a class of events or circumstances whose overall probability of occurrence is such that it is considered to encompass only credible possibilities for purposes of safety analysis. The term "general concept of defence-in-depth" when applied to nuclear power sources in outer space considers the use of design features and mission operations in place of or in addition to active systems, to prevent or mitigate the consequences of system malfunctions. Redundant safety systems are not necessarily required for each individual component to achieve this purpose. Given the special requirements of space use and of varied missions, no particular set of systems or features can be specified as essential to achieve this objective. For the purposes of paragraph 2 (a) of principle 3, the term "made critical" does not include actions such as zero-power testing which are fundamental to ensuring system safety.

Principle 3. Guidelines and criteria for safe use

In order to minimize the quantity of radioactive material in space and the risks involved, the use of nuclear power sources in outer space shall be restricted to those space missions which cannot be operated by non-nuclear energy sources in a reasonable way.

1. General goals for radiation protection and nuclear safety

(a) States launching space objects with nuclear power sources on board shall endeavour to protect individuals, populations and the biosphere against radiological hazards. The design and use of space objects with nuclear power sources on board shall ensure, with a high degree of confidence, that the hazards, in foreseeable operational or accidental circumstances, are kept below acceptable levels as defined in paragraphs 1 (a) and (c).

Such design and use shall also ensure with high reliability that radioactive material does not cause a significant contamination of outer space.

(b) During the normal operation of space objects with nuclear power sources on board, including re-entry from the sufficiently high orbit as defined in paragraph 2 (b), the appropriate radiation protection objective for the public recommended by the International Commission on Radiological Protection shall be observed. During such normal operation there shall be no significant radiation exposure.

(c) To limit exposure in accidents, the design and construction of the nuclear power source systems shall take into account relevant and generally accepted international radiological protection guidelines.

Except in cases of low-probability accidents with potentially serious radiological consequences, the design for the nuclear power source systems shall, with a high degree of confidence, restrict radiation exposure to a limited geographical region and to individuals to the principal limit of 1 mSv in a year. It is permissible to use a subsidiary dose limit of 5 mSv in a year for some years, provided that the average annual effective dose equivalent over a lifetime does not exceed the principal limit of 1 mSv in a year.

The probability of accidents with potentially serious radiological consequences referred to above shall be kept extremely small by virtue of the design of the system.

Future modifications of the guidelines referred to in this paragraph shall be applied as soon as practicable.

(d) Systems important for safety shall be designed, constructed and operated in accordance with the general concept of defence-in-depth. Pursuant to this concept, foreseeable safety-related failures or malfunctions must be capable of being corrected or counteracted by an action or a procedure, possibly automatic.

The reliability of systems important for safety shall be ensured, inter alia, by redundancy, physical separation, functional isolation and adequate independence of their components.

Other measures shall also be taken to raise the level of safety.

2. Nuclear reactors

(a) Nuclear reactors may be operated:

(i) On interplanetary missions;

(ii) In sufficiently high orbits as defined in paragraph 2 (b);

(iii) In low-Earth orbits if they are stored in sufficiently high orbits after the operational part of their mission.

(b) The sufficiently high orbit is one in which the orbital lifetime is long enough to allow for a sufficient decay of the fission products to approximately the activity of the actinides. The sufficiently high orbit must be such that the risks to existing and future outer space missions and of collision with other space objects are kept to a minimum. The necessity for the parts of a destroyed reactor also to attain the required decay time before re-entering the Earth's atmosphere shall be considered in determining the sufficiently high orbit altitude.

(c) Nuclear reactors shall use only highly enriched uranium 235 as fuel. The design shall take into account the radioactive decay of the fission and activation products.

(d) Nuclear reactors shall not be made critical before they have reached their operating orbit or interplanetary trajectory.

(e) The design and construction of the nuclear reactor shall ensure that it can not become critical before reaching the operating orbit during all possible events, including rocket explosion, re-entry, impact on ground or water, submersion in water or water intruding into the core.

(f) In order to reduce significantly the possibility of failures in satellites with nuclear reactors on board during operations in an orbit with a lifetime less than in the sufficiently high orbit (including operations for transfer into the sufficiently high orbit), there shall be a highly reliable operational system to ensure an effective and controlled disposal of the reactor.

3. Radioisotope generators

(a) Radioisotope generators may be used for interplanetary missions and other missions leaving the gravity field of the Earth. They may also be used in Earth orbit if, after conclusion of the operational part of their mission, they are stored in a high orbit. In any case ultimate disposal is necessary.

(b) Radioisotope generators shall be protected by a containment system that is designed and constructed to withstand the heat and aerodynamic forces of re-entry in the upper atmosphere under foreseeable orbital conditions, including highly elliptical or hyperbolic orbits where relevant. Upon impact, the containment system and the physical form of the isotope shall ensure that no radioactive material is scattered into the environment so that the impact area can be completely cleared of radioactivity by a recovery operation.

Principle 4. Safety assessment

1. A launching State as defined in principle 2, paragraph 1, at the time of launch shall, prior to the launch, through cooperative arrangements, where relevant, with those which have designed, constructed, or manufactured the nuclear power source, or will operate the space object, or from whose territory or facility such an object will be launched, ensure that a thorough and comprehensive safety assessment is conducted. This assessment shall cover as well all relevant phases of the mission and shall deal with all systems involved, including the means of launching, the space platform, the nuclear power source and its equipment and the means of control and communication between ground and space.

2. This assessment shall respect the guidelines and criteria for safe use contained in principle 3.

3. Pursuant to article XI of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, the results of this safety assessment,

together with, to the extent feasible, an indication of the approximate intended time-frame of the launch, shall be made publicly available prior to each launch, and the Secretary-General of the United Nations shall be informed on how States may obtain such results of the safety assessment as soon as possible prior to each launch.

Principle 5. Notification of re-entry

1. Any State launching a space object with nuclear power sources on board shall in a timely fashion inform States concerned in the event this space object is malfunctioning with a risk of re-entry of radioactive materials to the Earth. The information shall be in accordance with the following format:

(a) System parameters:

(i) Name of launching State or States including the address of the authority which may be contacted for additional information or assistance in case of accident;

(ii) International designation;

(iii) Date and territory or location of launch;

(iv) Information required for best prediction of orbit lifetime, trajectory and impact region;

(v) General function of spacecraft;

(b) Information on the radiological risk of nuclear power source(s):

(i) Type of nuclear power source: radioisotopic/reactor;

(ii) The probable physical form, amount and general radiological characteristics of the fuel and contaminated and/or activated components likely to reach the ground. The term "fuel" refers to the nuclear material used as the source of heat or power.

This information shall also be transmitted to the Secretary-General of the United Nations.

2. The information, in accordance with the format above, shall be provided by the launching State as soon as the malfunction has become known. It shall be updated as frequently as practicable and the frequency of dissemination of the updated information shall increase as the anticipated time of re-entry into the dense layers of the Earth's atmosphere approaches so that the international community will be informed of the situation and will have sufficient time to plan for any national response activities deemed necessary.

3. The updated information shall also be transmitted to the Secretary-General of the United Nations with the same frequency.

Principle 6. Consultations

States providing information in accordance with principle 5 shall, as far as reasonably practicable, respond promptly to requests for further information or consultations sought by other States.

Principle 7. Assistance to States

1. Upon the notification of an expected re-entry into the Earth's atmosphere of a space object containing a nuclear power source on board and its components, all States possessing space monitoring and tracking facilities, in the spirit of international cooperation, shall communicate the relevant information that they may have available on the malfunctioning space object with a nuclear power source on board to the Secretary-General of the United Nations and the State concerned as promptly as possible to allow States that might be affected to assess the situation and take any precautionary measures deemed necessary.

2. After re-entry into the Earth's atmosphere of a space object containing a nuclear power source on board and its components:

(a) The launching State shall promptly offer, and if requested by the affected State, provide promptly the necessary assistance to eliminate actual and possible harmful effects, including assistance to identify the location of the area of impact of the nuclear power source on the Earth's surface, to detect the re-entered material and to carry out retrieval or clean-up operations;

(b) All States, other than the launching State, with relevant technical capabilities and international organizations with such technical capabilities shall, to the extent possible, provide necessary assistance upon request by an affected State.

In providing the assistance in accordance with subparagraphs (a) and (b) above, the special needs of developing countries shall be taken into account.

Principle 8. Responsibility

In accordance with article VI of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, States shall bear international responsibility for national activities involving the use of nuclear power sources in outer space, whether such activities are carried on by governmental agencies or by non-governmental entities, and for assuring that such national activities are carried out in conformity with that Treaty and the recommendations contained in these Principles. When activities in outer space involving the use of nuclear power sources are carried on by an international organization, responsibility for compliance with the aforesaid Treaty and the recommendations contained in these Principles shall be borne both by the international organization and by the States participating in it.

Principle 9. Liability and compensation

1. In accordance with article VII of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, and the provisions of the Convention on International Liability for Damage Caused by Space Objects, b/ each State which launches or procures the launching of a space object and each State from whose territory or facility a space object is launched shall be internationally liable for damage caused by such space objects or their component parts. This fully applies to the case of such a space object carrying a nuclear power source on board. Whenever two or more States jointly launch such a space object, they shall be jointly and severally liable for any damage caused, in accordance with article V of the above-mentioned Convention.

2. The compensation that such States shall be liable to pay under the aforesaid Convention for damage shall be determined in accordance with international law and the principles of justice and equity, in order to provide such reparation in respect of the damage as will restore the person, natural or juridical, State or international organization on whose behalf a claim is presented to the condition which would have existed if the damage had not occurred.

3. For the purposes of this principle, compensation shall include reimbursement of the duly substantiated expenses for search, recovery and clean-up operations, including expenses for assistance received from third parties.

Principle 10. Settlement of disputes

Any dispute resulting from the application of these Principles shall be resolved through negotiations or other established procedures for the peaceful settlement of disputes, in accordance with the Charter of the United Nations.

Principle 11. Review and revision

These Principles shall be reopened for revision by the Committee on the Peaceful Uses of Outer Space no later than two years after their adoption.

---

b/ General Assembly resolution 2777 (XXVI), annex.

كيفية الحصول على منشورات الأمم المتحدة

يمكن الحصول على منشورات الأمم المتحدة من المكتبات ودور التوزيع في جميع أنحاء العالم . استعلم عنها من المكتبة التي تتعامل معها أو اكتب إلى : الأمم المتحدة ، قسم البيع في نيويورك أو في جنيف .

如何购取联合国出版物

联合国出版物在全世界各地的书店和经售处均有发售。请向书店询问或写信到纽约或日内瓦的联合国销售组。

HOW TO OBTAIN UNITED NATIONS PUBLICATIONS

United Nations publications may be obtained from bookstores and distributors throughout the world. Consult your bookstore or write to: United Nations, Sales Section, New York or Geneva.

COMMENT SE PROCURER LES PUBLICATIONS DES NATIONS UNIES

Les publications des Nations Unies sont en vente dans les librairies et les agences dépositaires du monde entier. Informez-vous auprès de votre libraire ou adressez-vous à : Nations Unies, Section des ventes, New York ou Genève.

КАК ПОЛУЧИТЬ ИЗДАНИЯ ОРГАНИЗАЦИИ ОБЪЕДИНЕННЫХ НАЦИЙ

Издания Организации Объединенных Наций можно купить в книжных магазинах и агентствах во всех районах мира. Наводите справки об изданиях в вашем книжном магазине или пишите по адресу: Организация Объединенных Наций, Секция по продаже изданий, Нью-Йорк или Женева.

COMO CONSEGUIR PUBLICACIONES DE LAS NACIONES UNIDAS

Las publicaciones de las Naciones Unidas están en venta en librerías y casas distribuidoras en todas partes del mundo. Consulte a su librero o diríjase a: Naciones Unidas, Sección de Ventas, Nueva York o Ginebra.

Litho in United Nations, New York ISSN 0255-1144 38885—September 1992—3,175